Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

CONDITIONAL MAJOR (DRAFT PERMIT) NO. F-05-050 R1
CYMETECH CORPORATION
CALVERT CITY, KY 42029
8/7/2008
ANDREW TRUE, REVIEWER

SOURCE I.D.:	21-157-00061
SOURCE A.I. #:	46167
ACTIVITY #:	APE20080001

ADMINISTRATIVE AMENDMENT F-05-050 R1:
An application for a name and ownership change was received by the Division for Air Quality on July 23, 2008 requesting a name change from Cymetech, LLC, to Cymetech Corporation. Permit F-05-050 was revised to F-05-050 R1, to reflect the name change.

SOURCE DESCRIPTION:

An application for an initial Conditional Major operating permit for Cymetech, LLC for the operation of a dicyclopentadiene (DCPD) monomer facility, located in Calvert City, Kentucky, was received by the Division on November 18, 2003. The owners of Cymetech, LLC changed on May 10, 2005, but the permitted facility remained Cymetech, LLC. On July 23, 2008 an application was received by the Division requesting an administrative revision for a name/owner change from Cymetech LLC to Cymetech Corporation.

The Cymetech facility is located at the site of the former B.F. Goodrich Company complex and consists of the equipment comprising the portion of that complex formerly known as the B.F. Goodrich Telene facility. A Title V Operating Permit application was submitted by the B.F. Goodrich Company on December 11, 1998 for the entire complex, which included the Telene and Carbopol® facilities. Subsequent to the submittal of that application, the assets of the complex were sold. The Telene facility, now known as the Dicyclopentadiene facility, is now wholly owned by Cymetech Corporation and is the subject of this permit. The Carbopol® facility is under separate ownership and is unrelated to this permit.

The Standard Industrial Classification (SIC) Code for this source is 2869, *Industrial Organic Chemicals, Not Elsewhere Classified*. The Dicyclopentadiene facility is designed to extract high purity (>97%) DCPD from a crude stream containing 40-60% DCPD. Other commercial products can also be produced from this process, including the following:

- Methylcyclopentadiene Dimer
- Resin Former/Hydrocarbon Blend Stock
- Resin Oil Heavies
- Dicyclopentadiene Heavies

This process involves reducing all the contained DCPD to cyclopentadiene (CPD), distilling the CPD from the higher and lower molecular weight materials, then recombining the CPD under controlled conditions to yield a high purity DCPD product.

The primary components of this process are as follows:

- 3 Distillation Columns (CL-300, 301, and 302)
- Product Storage Tanks
- Heat Exchangers and Condensers
- Process Tanks
- Special Heat Exchangers (Dimerizers)
- Miscellaneous piping, valves, etc.
- Vacuum System
- Non-contact Cooling Tower

Cymetech Corporation has accepted permit conditions to limit the facility's potential to emit (PTE) below major source thresholds, and the source is classified as a "nonmajor source" pursuant to 401 KAR 52 and 40 CFR 70. Therefore, the source is subject to the provision of 401 KAR 52:030.

COMMENTS:

(1) Emission Units: The following is a list of significant emission units at the facility:

(a) **T01- Dicyclopentadiene Crackers**

01 (H-300) Dicyclopentadiene Cracker
Primary Fuel: Westlake Fuel Gas
Secondary Fuel: Natural Gas (Emergency Only)
Construction Date: 1996
Rated Capacity: 3 mmBtu/hr
Control Equipment: None

02 (H-301) Dicyclopentadiene Cracker
Primary Fuel: Westlake Fuel Gas
Secondary Fuel: Natural Gas (Emergency Only)
Construction Date: 1997
Rated Capacity: 5 mmBtu/hr
Control Equipment: None

(b) **T02- Dicyclopentadiene Process Units**

03 (CL-300, TK-302): Distillation Column CL-300 and Reflux Drum (TK-302)
Description: TK-302, which maintains the volume of cyclopentadiene for reflux to the CL-300 column, vents to TK-312 (EP T02-05) which is connected to the Westlake CA&O Ethylene Plant Flare
Construction Date: 1996
Storage Capacity: 640 gallons
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

04 (CL-301, CL-302, TK-316): Lights/NBA Distillation Columns CL-301, CL-302 to Vacuum Condensate Drum (TK-316)
Description: TK-316 receives liquid discharge from the vacuum pump, which is then pumped to TK-312. TK-316 also vents to TK-312, which is connected to the Westlake CA&O Ethylene Plant Flare.
Construction Date: 1996
Storage Capacity: 50 gallons
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

05 (TK-312, CL-302) Blowdown Tank for Distillation Column CL-302
Description: Tank TK-312 receives CL-302 bottom streams; streams from relief valve vents, pump drains, flasher bottoms, Vacuum Condensate Drum (TK-316); and vents from tanks TK-302 and TK-316. TK-312 is connected to the Westlake CA&O Ethylene Plant Flare.
Construction Date: 1996
Storage Capacity: 1,150 gallons
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

(c) **T03- Storage Tank Operations**

06 (TK-300A) Horizontal Fixed Roof Tank Storing Resin Oil Feedstock
Construction Date: 1996
Storage Capacity: 57,500 gallons, Tank Diameter 12 feet
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)
Control Efficiency: 99.8%

07 (TK-300B) Horizontal Fixed Roof Tank Storing Resin Oil Feedstock
Construction Date: 1996
Storage Capacity: 57,500 gallons, Tank Diameter 12 feet
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)
Control Efficiency: 99.8%

08 (TK-305) Horizontal Fixed Roof Tank Storing Resin Former Product
Construction Date: 1996
Storage Capacity: 53,300 gallons, Tank Diameter 12 feet
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)
Control Efficiency: 99.8%

09 (TK-306) Horizontal Fixed Roof Tank Storing MCPDD/Resin Oil Heavies Product
Construction Date: 1996
Storage Capacity: 28,300 gallons, Tank Diameter 12 feet

Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

Control Efficiency: 99.8%

10 (TK-307) Horizontal Fixed Roof Tank Storing Trade DCPD Product
Construction Date: 1996
Storage Capacity: 53,300 gallons, Tank Diameter 12 feet
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

Control Efficiency: 99.8%

11 (TK-308) Horizontal Fixed Roof Tank Storing Dicyclopentadiene (DCPD)Product
Construction Date: 1996
Storage Capacity: 53,300 gallons, Tank Diameter 12 feet
Control Equipment: Westlake CA&O Ethylene Plant Flare (EP #321 in V-00-022)

Control Efficiency: 99.8%

(2) Refer to Section C of the permit for a list of the facility's insignificant activities and generally applicable regulations.

(3) Emission Factors: The source's potential emissions of air pollutants are calculated based on emission factors provided in the permit application. These emission factors were derived from U.S.EPA's AP-42 (Sections 1 and 7) document and TANKS 4.0 software, the *Control of Volatile Organic Compound (VOC) Emissions from Batch Processes*, EPA-453/R-93-017, Eqn. 3-7, p. 3-9 (11/93) , and standard engineering handbooks for chemical properties, including related vapor pressure data.

(4) Applicable Regulations:

(a) The two Dicyclopentadiene Crackers (T01) are subject to 401 KAR 59:015, *New Indirect Heat Exchangers,* which applies to indirect heat exchangers having a heat input capacity of more than one (1) mmBtu/hr. The related particulate and sulfur dioxide emission limits are included in the permit.

(b) The Dicyclopentadiene Process Unit's distillate columns (CL-300, CL-301, and CL-302) are subject to 401 KAR 60:005, which incorporates by reference 40 CFR 60, Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations*. This regulation applies to each process unit that produces any of the chemicals listed in 40 CFR 60.667 as a product, co-product, by-product, or intermediate. The facility will continue to comply with the limits of 40 CFR 60, Subpart NNN through the use of a flare. The emissions from the affected facilities, and other process equipment and storage tanks, are vented to a common header and piped to the flare which is owned by the immediately adjacent source, Westlake CA&O Corp. (AFS # 021-157-00039). The Division has approved the use of this flare for the Cymetech facility, as reflected in Westlake's Title V operating Permit

No. V-00-022 for EP-321 (Ethylene Plant - Ethylene Flare). The limits, monitoring, record keeping and reporting requirements relating to 40 CFR 60, Subpart NNN for the flare are incorporated into Permit No. V-00-022. This permit requires the permittee to ensure that Westlake maintains compliance with those requirements.

(c) 40 CFR 60.18(b), Subpart A, *General Control Device Requirements*, applies to the Westlake CA&O Ethylene Flare (EP 321 in Permit No. V-00-022).

(d) 401 KAR 63:021, *Existing source emitting toxic air pollutants,* applies to a source in existence on the effective date of this regulation which was issued a permit pursuant to 401 KAR 50:035 with conditions based on this regulation or 401 KAR 63:022. Applicable State Origin requirements have been established for source emissions of dicyclopentadiene and cyclopentadiene, and related pollutant limitations are specified in the permit for this applicable rule.

(e) 401 KAR 63:020, *Potentially hazardous matter or toxic substances,* applies to each affected facility which emits or may emit potentially hazardous or toxic substances as defined at 401 KAR 63:020, Section 2, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. This source is subject to the requirements of 401 KAR 60:005 (40 CFR 60, Subpart NNN), as discussed above. The permittee shall use a flare to comply with Subpart NNN, which shall also result in the control of organic HAP emissions. Compliance with the requirements for the flare shall satisfy the requirements of 401 KAR 63:020.

(f) The 401 KAR 60:005, which incorporates by reference federal regulation 40 CFR 60, Subpart Kb (40 CFR 60 112b), *Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984*, applies to each volatile organic liquid storage vessel with a capacity greater than or equal to 75 m^3 except for storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor less than 3.5 kPa or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15 kPa. This regulation is applicable only to EP10 (TK-307) because the tank capacity is greater than 151 m^3 and the maximum true vapor pressure is greater than 3.5 kPa. Since the maximum true vapor pressure of the material stored in TK-307 is less than 5.2 kPa (0.757 psia), the control requirement of 40 CFR 60.112b is not applicable and only 40 CFR 60.116b for maintenance of records applies to this tank.

(5) <u>Non-Applicable Regulations:</u>

(a) Cymetech Corporation has requested voluntary limits to preclude the applicability of 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*, and 401 KAR 52:020, *Title V permits*. These limits are included in the permit and, therefore, the specified rules do not apply to this source.

(b) 40 CFR 63 (Subpart DDDDD), *National Emission Standards for Hazardous Air Pollutants for Industrial/Commercial/Institutional Boilers and Process Heaters* is not applicable because the source requested voluntary limits such that combined HAP emissions are below 25 tons per year and any individual HAP emission is below 10 tons per year. Therefore, this is an area source of HAP emissions, as defined at 40 CFR 63.2, and Subpart DDDDD is not applicable.

(c) 40 CFR 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Manufacturing Industry* does not apply because the facility does not produce as a product, intermediate, or byproduct, any of the chemicals listed in 40 CFR 60.489.

(d) 40 CFR 64, Compliance Assurance Monitoring (CAM), does not apply to any emission unit because this source is being approved to operate under a Conditional Major permit and, pursuant to 40 CFR 64.2(a), the requirements of this rule are applicable only to a source required to obtain a Title V (Part 70 or 71) permit.

EMISSION AND OPERATING CAPS DESCRIPTION:

Marshall County is designated as attainment for all criteria pollutants. To preclude the applicability of 401 KAR 51:017, *Prevention of significant deterioration of air quality*, and 401 KAR 52:020, *Title V permits*, the following source wide emission limits shall apply:

a. Volatile organic compound (VOC) emissions: 90 tons per year;

b. Combined hazardous air pollutant (HAP) emissions: 22.5 tons per year; and

c. Single hazardous air pollutants (HAPs) emissions: 9 tons per year.

The permittee shall use a control device (flare) and limited feedstock processing in order to comply with the specified emission limits. Related enforceable monitoring, record keeping and reporting requirements are included in the permit. All other criteria pollutants will be emitted at a rate of less than 100 tons per year each. Compliance with the VOC limit shall make this source a synthetic minor source pursuant to 401 KAR 51:017, Prevention of significant deterioration of air quality. Compliance with these permit limits shall also make the requirements of 401 KAR 52:020, Title V permits, not applicable to this source.

PERIODIC MONITORING AND TESTING:

In order to make the conditional major/synthetic minor emission limits enforceable as a practical matter, resin oil throughput for the plant shall not exceed 14,336,000 gallons in any twelve (12) consecutive month period. This operating limit, along with continuous operation of the Westlake CA&O Ethylene Flare (EP #321 in V-00-022) shall ensure compliance with the conditional major/synthetic minor status of this source. A compliance test for the Westlake CA&O Ethylene Flare (EP #321 in V-00-022) was conducted by Cymetech on June 8, 2004 and May 10, 2005. The permittee shall repeat this test at least once each permit term.

To demonstrate compliance with the source-wide emissions standards the permittee shall monitor and maintain records of monthly and consecutive twelve (12) month totals of resin oil received in EP06 (TK-300A) Resin Oil Storage Tank and EP07 (TK-300B) Resin Oil Storage Tank. The calculation must be completed by the end of the month following the month in question and the consecutive 12-month totals include the totals for the month in question plus the totals for the previous 11 months.

OPERATIONAL FLEXIBILITY:

Compliance with 40 CFR 65 Subpart D, *Consolidated Federal Air Rule; Synthetic Organic Chemical Manufacturing Industry,* as an alternate to 40 CFR 60 Subpart NNN. This alternate operating scenario applies to EP T02 - Dicyclopentadiene Process Units.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

PERMIT HISTORY:

Permit	Permit Type	Activity #	Complete Date	Issuance Date	Summary of Actions
F-05-050	Initial Issuance, Operating, Conditional Major/Synthetic Minor	APE20040001	February 18, 2004	July 25, 2006	Initial Issuance, Operating, Conditional Major/Synthetic Minor
F-05-050 R1	Administrative Amendment	APE20080001	August 1, 2008	August 8, 2008	Name Change